ARS 81-9
February 1962

THE IMPORTED FIRE ANT

PROGRAM AND PROGRESS

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

CONTENTS

Prepared by

Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture

INTRODUCTION

The imported fire ant is an annoying and destructive pest of the South that:

- Builds mounds, which interfere with crop production and mar the landscape.
- Attacks and sometimes kills plants, young animals, and birds.
- Has a painful sting capable of causing serious illness to persons allergic to the venom.

The imported fire ant has been found in Alabama, Arkansas, Mississippi, Louisiana, Florida, Georgia, North Carolina, South Carolina, and Texas. It is known to be present on more than 24 million acres in 277 counties.

The main body of the infestation lies within an arc extending from southeastern Texas to northern Mississippi and Alabama, western Georgia, and western Florida. An infestation occurring in Shelby County, Tenn., was eradicated by that State prior to inception of the Federal-State cooperative program.

COOPERATIVE STATE-FEDERAL PROGRAM

Since the fall of 1957, the U. S. Department of Agriculture has cooperated with interested States in an intensive attack on this insect enemy. Cost of the program is shared by Federal, State, and local governments, and property owners in areas infested by imported fire ants.

The program is conducted jointly by the Plant Pest Control Division of USDA's Agricultural Research Service and State plant pest control agencies and institutions, local governments, organizations, and property owners.

In addition, most States with imported fire ants have established fire ant advisory committees, usually at State and local levels.

The State committee works with program officials in developing plans and conducting the fire ant program under State and Federal supervision.

Farmers and other residents may participate through local committees in deciding how local support--cash, materials, or labor--is to be obtained. The local committees also represent property owners, in cooperation with Federal and State officials, to organize the program.

Other groups actively participating in the program include:

- State and county highway commissions.
- Railroad, truck and air transport companies.
- Public Health agencies.
- Utility companies.
- School boards, nurseries, playground supervisors.
- Managers of recreational areas.

FINANCING THE PROGRAM

This program is financed from funds made available from Federal, State, and local sources.

Federal funds are used to administer the Federal quarantine; to conduct surveys to detect presence of the ant and to determine the limits of the infestations; to develop more efficient and economical means of eradication; and to participate with State and local agencies, organized groups of property owners, and utility companies in eradicating the fire ant.

State participation may consist of appropriations, or it may be a combination of State appropriations and cost-sharing by landowners.

The support of farmers and others under this system has been impressive--particularly in areas heavily infested with the imported fire ant. Requests for assistance in controlling the ants have consistently exceeded local financing.

PROGRAM DEVELOPMENT

At the start of the program, a methods improvement laboratory was established at Gulfport, Miss., to improve effectiveness and economy of operations.

Program improvements reflect the pertinent studies made by this team, as well as studies carried out cooperatively with USDA and State experiment stations, and State and Federal fish and wildlife agencies, and observations of Federal and State field personnel.

GOALS ESTABLISHED

In order to accomplish ultimate eradication, the following goals have been established:

1. Surveys to determine the spread of the ants.

2. Quarantine regulations to prevent invasion of additional States and regions.

3. Eradication of outlying infestations first to shrink the periphery of the total region having ants.

4. Suppression of ant populations so that additional land within an infested area is protected from spread.

PROCEDURES

Three coordinated steps to eradicate the imported fire ant now being carried out are: (1) Surveys, (2) quarantines, and (3) treatment.

Surveys

Surveys are conducted by Federal and State pest control workers to determine the outward limits of the generally infested areas, and the extent and degree of infestation. Such information permits program officials, with the aid of advisory committees and other Federal-State agencies, to plan effective program procedures to combat the pest.

Surveys are continuous because of the ever-changing pattern of infestation. However, efforts to spot new infestations are intensified in the fall and winter months when mounds are not so well hidden by vegetation.

Quarantines

A Federal quarantine was invoked in 1958 to help prevent the interstate spread of the imported fire ant and to protect treated areas from reinfestation.

The quarantine regulates the movement of materials such as soil, gravel, and sand, or products with soil attached; and unmanufactured forest products.

By inspecting these products, and treating them if necessary, State and Federal program personnel have kept them moving in trade channels in compliance with Federal and State quarantine regulations. Long-distance spread of the pest through this means has thus been prevented.

States immediately affected by the quarantine are: Alabama, Florida, Georgia, Louisiana, Mississippi, and Texas.

Treatment

1. Each area to be treated with insecticide is studied thoroughly to determine the best method and timing for the application. Bodies of water, marshes, dairy pastures, and other situations requiring special attention are marked out and recorded on maps.

2. Isolated infestations beyond the boundary of the generally infested areas are treated first to keep the pest from spreading further.

3. Within the generally infested area, large infested areas are divided into manageable blocks for treatment over a period of 3 or more years. All infested land must be treated so that fire ants on land left untreated will not reinfest treated areas after the residual effect of the insecticide is gone.

4. Insecticide treatments are applied continuously during late fall and early spring each year after most of the crops are harvested.

The granular insecticide used in the program can be applied by hand-operated machines, vehicle-mounted equipment, or by aircraft.

Experience has shown that in heavily infested areas, distribution of the insecticide by aircraft is the most effective method of coping with the pest.

Ground equipment can be used to treat small blocks or to treat mounds that occasionally recur after aircraft treatments.

INSECTICIDE

Heptachlor has proved to be the most effective and economical insecticide so far developed for eradicating the imported fire ant.

The insecticide is mixed with a special clay and applied in a dry, granular form. The granules sift readily through the foliage. After they reach the ground, the insecticide is released where the ants can come in contact with it.

Dosage Reduced

Through the work of the Methods Improvement Unit, Plant Pest Control Division, ARS, the dosage of heptachlor used in the program has been reduced significantly.

At the start of the program in late 1957, treatment consisted of a single treatment of 2 pounds per acre. By tightening specifications and working with insecticide producers to obtain more uniform formulations, Methods Improvement researchers were able to reduce the required dosage to 1-1/4 pounds per acre.

Further research then led to an even more dramatic breakthrough. Studies revealed that two, 1/4-pound applications of heptachlor 3 to 6 months apart were as effective as the single application of the larger dosage. It reduced the chances of skips during application and the amount of insecticide that beneficial insects and wildlife are exposed to at one time. Therefore, the split-application, lower-dosage rate has been adopted in most areas.

SAFETY STRESSED

Close Federal or State supervision of eradication activities is maintained at all times. When airplanes are used, the application is supervised from the air, while ground crews mark the swath widths with special balloons. Radio communication is maintained so that operations can be coordinated.

PUBLIC HEALTH

The insecticide used in this program has been screened by USDA and the Department of Health, Education, and Welfare for safety to persons applying the insecticide as well as for the health of people living in the areas being treated.

PESTICIDES AND WILDLIFE

Even at the low dosage rate of insecticide now being used, great care is exercised in treating wildlife habitats so that exposure to the insecticide is at a minimum. For example, by careful timing, marshes in Louisiana are treated safely, although they are the wintering waters for literally millions of ducks and geese. Overwintering grounds for other migratory birds receive the same careful consideration.

Extensive quail hunting areas have been treated for the imported fire ant. Yet, Georgia and Alabama conservationists report that quail have increased in the past few years.

PROGRESS SO FAR

The following progress in the imported fire ant program has been made:

- More than 3 million acres have been treated with insecticide.
- Treatments have been made in more than half of the 277 counties known to be infested.

- All known infestations in North Carolina and Tennessee have been treated; and treatments in Arkansas and South Carolina are in the "cleanup" stage.

- Federal quarantine regulations have prevented long-distance, artificial spread of the ant without restricting the sale of regulated commodities.

- Dosage rate of insecticide used in the program has been reduced 75 percent through improvements in the treatment procedure.

- Progress has been made in developing baits to supplement the use of soil treatments.

ECONOMIC DAMAGE-INDIRECT

Imported fire ants are destructive, costly pests. However, greatest losses from the fire ants come from the reduced efficiency of land use and labor and machinery--losses hard to assess in dollar values.

Unfortunately for the farmer, ants prefer land exposed to the sun. Therefore, some of the most valuable farming and pasture land is most heavily infested. Improved pastures and hay fields are especially hard hit.

Whenever land is cultivated intermittently, as in improved pastures, ants increase rapidly. This is an important factor in areas where livestock production represents a vital part of the agricultural economy.

The total time farmers lose during seeding, fertilizing, or harvesting is difficult to estimate. But with 20 to 40 ant mounds per acre--not uncommon in heavily infested areas--the difficulties can be great.

For example, when hay is cut and left to dry in an infested field, the imported fire ants build mounds in the fallen hay. The ants delay the farmer in getting his hay into storage and the hay is often damaged by weather. In addition, when the hay is baled, soil from the mounds is gathered up in the hay, making that part unpalatable to livestock--therefore worthless.

The ants can also complicate the harvesting of small grains. It is practically impossible for the farmer to cut grain growing over or near fire ant mounds. If he does cut such grain, he risks expensive breakdowns to his machinery. If he uses combines, soil from mounds gets into the machinery and grain.

All in all, the ants cause damaged equipment, loss of time and labor, loss of grain, and lower prices for grain containing soil.

In addition, it's difficult to hire workers to harvest crops or cultivate fields in heavily infested areas--which may contain as many as 10 million worker ants per acre.

ECONOMIC DAMAGE-DIRECT

Imported fire ants also cause direct damage--although this is probably not as serious as their indirect damage.

They sometimes damage vegetable crops, such as okra, collard, cabbage, egg plant, germinating seed corn, and citrus trees. They soften the tender stems just below the soil, then suck the plant juices; gnaw holes in roots, tubers, stalks, buds, ears, and pods.

Farmers have reported that the ants attack young, unprotected animals, such as newborn calves and pigs and the young of ground-nesting birds.

A CITY PEST, TOO

Imported fire ants don't restrict themselves to making life miserable for rural dwellers. These pests invade lawns, cemeteries, parks, playgrounds, school yards, and golf courses.

For example, over 75 percent of the mounds on about 14,000 acres treated in San Antonio, Tex., were on residential properties.

The mounds are unsightly and cause inconvenience in caring for the grounds. And people are reluctant to use recreational areas heavily infested by fire ants because of the fear of being stung.

FIRE ANT HISTORY IN USA

The imported fire ant entered this country at Mobile, Ala., around 1918. However, because it closely resembles native fire ants, it was not identified as a separate species until 1930.

From Mobile, it began to spread outward, and by 1937, was a serious pest. That year, the State of Alabama made the first full-scale effort to control the ant. The ants appeared to die down for a time, but by 1947, they had spread to a number of areas in Alabama and Mississippi. Mississippi initiated a limited control program in 1948.

The pest continued to spread and by the end of 1953 it was known to infest 102 counties in 9 States. By the beginning of 1957, the ants were present on more than 170 counties.

After many appeals for assistance from fire ant-infested States, Congress in the fall of 1957 authorized USDA to join interested States in an eradication program.

LIFE OF THE IMPORTED FIRE ANT

Imported fire ants belong to the same family as bees, wasps, and hornets. The three forms of imported fire ants are: (1) Winged, fertile females (queens); (2) winged, fertile males; (3) worker ants of various sizes. The workers are wingless, sterile females.

- The imported fire ant is a costly pest in terms of inconvenience, reduced efficiency of labor and machinery, and in infested land that can't be utilized fully.
- Direct damages to crops, small animals, and birds are real losses, but these losses are secondary to losses of land and labor efficiency.
- Distribution of insecticide by aircraft is the most efficient method of staying ahead of the relentless spread of the ants in heavily infested areas.
- A vital step in eradication is to keep down populations of ants in the periphery of the generally infested areas.
- Unless checked, the pest could spread throughout much of the United States.

Growth Through Agricultural Progress